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AMIN, TUROCY & CALVIN, LLP
127 Public Square
57th Floor, Key Tower
CLEVELAND, OH 44114

EXAMINER	
CHANKONG, DOHM	

ART UNIT	PAPER NUMBER
2452	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket1@thepatentattorneys.com
hholmes@thepatentattorneys.com
lpasterchek@thepatentattorneys.com

Office Action Summary	Application No.	Applicant(s)	
	09/893,829	KRISHNASWAMY ET AL.	
	Examiner	Art Unit	
	DOHM CHANKONG	2452	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-15,17-23 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-15,17-23 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/8/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to Applicant's request for continued examination. Claims 1, 14, 15, 23, and 27 are amended. Claims 1-8, 10-15, 17-23, and 27 are presented for further examination.

2. This action is a non-final rejection.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/26/2008 has been entered.

Information Disclosure Statement

4. The examiner has considered the information disclosure statement (IDS) submitted on 8/8/2008.

Response to Arguments

5. Applicant's amendment of claim 27 does not overcome the §101 rejection. The new limitation recites, "wherein a memory operatively coupled to a processor retains at least one of the means." The use of the term "wherein" before the memory raises a question as to whether

the memory or processor are actually components of the system. In other words, as written, because the claim does not expressly recite that the system comprises the memory or the processor, it is possible to interpret either of those elements as not being part to system. To overcome this rejection, Applicant should simply remove the "wherein" term. *See also*, *MPEP §2111.04*.

6. Additionally, Applicant amends the independent claims to recite "wherein the optimizing the remote method call includes achieving an optimal response time by at least one of determining an optimal amount of data sent to the object, determining an optimal type of data sent to the object or determining which objects are invoked." Applicant argues that this amended limitation now overcomes the prior art references. But because of the limitation does not limit the scope of the claims and because Arnold and Clarke disclose the limitations as claimed, Applicant's arguments are not persuasive.

Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. *MPEP §2111.04*. For example, for a method claim, a whereby clause is not given weight when it simply expresses the intended result of a process step positively recited. *Id.*, (citing *Hoffer v. Microsoft Corp.*, 405 F.3d 1326 (Fed. Cir. 2005) (quoting *Minton v. Nat'l Ass'n of Securities Dealers, Inc.*, 336 F.3d 1373 (Fed. Cir. 2003))). And claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *MPEP 2114*.

Here, Applicant's method and apparatus (system) claims fail to include language that limits the claim's scope. With respect to apparatus claims 1, 14, and 27, the amended language does not limit the apparatus to a particular structure. Instead, Applicant is merely attempting to differentiate the apparatus from Arnold in terms of function rather than structure. That is, the new language "achieving an optimal response time" does not change the structure of the system being claimed but how the system is intended to be used. Similarly, for method claims 15 and 23, the amended limitation is merely the intended result of the step of either determining an optimal amount of data sent to the object, determining an optimal type of data sent to the object, or determining which objects are invoked. Therefore, as long as the prior art teach performing either of these steps, then they are all capable of the intended result of "achieving an optimal response time."

Arnold discloses that the proxy receives an intercepted method call as well as performing proxy pre-processing that includes machine learning to optimize the method call invocation includes achieving an optimal response time [column 9 «lines 4-15»]. Arnold's decision to cache requests is one method of achieving an optimal response time because the data value is cached locally and more easily accessible to the proxy. This interpretation is supported by the example given in Applicant's specification which describes determining whether "a database value had previously been cached in the proxy 220, and thus the database value could be passed to the remote object 240 and thus the database lookup...may not occur." [pg. 12 «lines 9-12»]. Arnold similarly discloses retrieving the data value locally if it is cached rather than performing a remote lookup.

Moreover, Clarke discloses performing machine learning by adaptively learning over time the behavior of the network to predict a critical level of network congestion before it occurs [0027]. Clarke achieves this goal by examining the incoming request and determining whether there is a back-off period associated with the object to be invoked [0028]. In other words, Clarke discloses achieving an optimal response time by limiting the types of traffic being sent over the network. Clarke therefore reads on the claimed limitation of optimizing the call including achieving an optimal response by determining which objects are being invoked. If the object being invoked as an associated back-off period, the call is not forwarded to prevent network congestion. The prevention of network congestion is one way to optimize the response time.

Based on the foregoing, Applicant's amendment does not overcome the cited references and Applicant's arguments are not persuasive. Thus, the rejections set forth in the previous action are maintained. It is noted that Applicant's specification further describes how the response time is optimized through a comparison between previous response times [pg. 12 «lines 5-29»]. If this feature were amended into the claims in a manner that limits the claim's scope, then such an amendment would likely overcome the prior art because none of the cited references disclose storing and subsequently comparing response times from previous requests.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claim 27 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The current position of the Patent Office in regard to statutory inventions under 35 U.S.C §101 for software claims is that software *per se* does not fall into any of the statutory categories. That is, software *per se* is neither a process, a machine, a manufacture, or a composition of matter. See the response to Applicant's arguments above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The rejection of the claim limitation directed to the interceptor's accessibility to application code is informed by the Applicant's specification. Specifically, Applicant's specification states that "intercepting a method call and making such interception accessible to an application developer can include receiving control and receiving a data structure...populated with information concerning the intercepted method call" [Applicant's specification, pg. 3, lines 1-4]. Further, the information concerning the call can include method names and input parameter information [pg. 3, lines 4-9]. For the purposes of this rejection, the interpretation of an "interceptor accessible to application code" relies on this explanation within Applicant's specification.

9. Claims 1-8 and 9-14 are rejected under 35 U.S.C §103(a) as being unpatentable over Arnold et al, U.S Patent No. 6.393.497 ["Arnold"], in view of Hollander et al, U.S Patent No. 6.823.460 ["Hollander"], in further view of Clarke et al, U.S Patent Publication No. 2002|0035642 ["Clarke"].

10. As to claim 1, Arnold discloses a system for interacting with an object, the system comprising:

an application code generic proxy that receives an intercepted method call, invokes a method on the object, receives results from the object and passes results to the entity that generated the intercepted method call based at least in part on the intercepted method call operability of the application code generic proxy modified by the application code, the application code generic proxy performs proxy pre-processing to optimize remote method call invocation before invoking the method on the object [Figure 6 | Figure 7 «items 704, 705» | column 9 «lines 4-37»], wherein the optimization of the remote method call includes achieving an optimal response time [column 9 «lines 4-15»: determining if the data value has been previously cached in order to speed retrieval time].

Arnold however does not expressly disclose a method call interceptor accessible to application code to at least one of adapt or extend functionalities nor does Arnold expressly disclose performing machine learning. Arnold also does not disclose that the optimization of the remote method call includes at least one of determining an amount of data sent to the object, determining a type of data sent to the object or determining which objects are invoked.

With respect to an application code accessible method call interceptor and routing

intercepted methods to proxies, Hollander discloses these features. Hollander is directed to a method of intercepting function calls that originate from the operating system and routing them to a proxy [column 4 «lines 33-39»]. Hollander's user-supplied custom code corresponds to Applicant's claimed application code and Hollander's function calls read on Applicant's method calls. Hollander user-supplied custom code has access to a data structure that is populated by information, such as the call's parameters, relating to the intercepted call [abstract : "input parameters might be filtered and changed by the user code" | column 8 «lines 8-11»].

In this manner, the user-supplied code can perform pre-processing on the intercepted call by affecting its parameters and by way of this improved interception functionality, Hollander discloses that the user code has enhanced and extended capability to control, manage and handle system events [column 4 «lines 40-47»]. Hollander also discloses the optimization of the remote method call includes at least one of determining an amount of data sent to the object, determining a type of data sent to the object or determining which objects are invoked [column 11 «line 60» to column 12 «line 5» : Hollander teaches determining the type of parameters being passed to the object].

Since such functionality is well known and utilized in conventional systems, it would have been obvious to one of ordinary skill in the art to have modified Arnold's proxy system to included Hollander's interception and optimization functionality. One would have been motivated to enable an interceptor that was accessible to user-code so that users would have more flexibility to manage the object environment by providing extended capability to control and manage system related function calls.

With respect to the machine learning feature, Arnold clearly discloses performing preprocessing, including optimization of the invocation by caching previous requests [column 9 «lines 4-15»]. Furthermore, Clarke is directed to a system with a proxy system in between [Figure 1]. The proxy utilizes machine learning in the step of preprocessing method calls from the client in order to optimize the invocation of the calls including achieving an optimal response time by determining which objects are invoked [see response to Applicant's arguments, *supra* | 0027 where : Clarke discloses that the proxy is adaptive in selecting appropriate servers with the proxy "learning over time which origin servers are most prone to overload." By doing so, the response time is optimized because network congestion is relieved by "backing off" requests].

It would have been obvious to one of ordinary skill in the art to incorporate Clarke's teachings of an adaptive proxy into Arnold's system. Clarke discloses that an adaptive proxy helps control network congestion over the network. Thus, one would have been motivated to modify Arnold's proxy to be adaptive to optimize network efficiency of handling requests over the network.

11. As to claim 2, Arnold discloses the object is located across a remote boundary [Figure 1 «item 606»].

12. As to claim 3, Arnold discloses the object is marshaled by reference [column 8 «lines 38-45»].

13. As to claim 4, Arnold discloses the object is marshaled by value [column 9 «lines 10-15»].

14. As to claim 5, Arnold discloses populating a call information data store with information associated with the intercepted method call, the call information data store is accessible to the application code generic proxy [column 9 «lines 16-27» | see also Hollander, abstract].

15. As to claim 6, Arnold discloses the call information data store is populated with at least one of: a method name and a class/interface defining method data [column 7 «lines 46-49» | column 9 «lines 59-66»].

16. As to claim 7, Arnold discloses the call information data store is a message object that be serialized and passed across a remote boundary [column 9 «lines 16-27»].

17. As to claim 8, Arnold discloses transferring control to a method in the application code generic proxy, the method in the application code generic proxy overrides a base class method defined in a base class object from which the application code generic proxy inherits [column 10 «lines 20-31»].

18. As to claim 10, Arnold discloses proxy preprocessing further comprises at least one of: transaction processing, object migration, monitoring remote method calls, caching local data, caching remote data, and controlling remote method call invocations [column 9 «lines 4-27»].

19. As to claim 11, Arnold discloses the application code generic proxy performing proxy post-processing after receiving the results from the object [Figure 7 «item 712»].

20. As to claim 12, Arnold discloses the proxy post-processing comprises at least one of transaction processing, monitoring remote method calls, caching local data, and controlling remote method call invocations [column 9 «lines 4-37»].

21. As to claim 13, Arnold discloses the proxy invoking the method on the object by invoking a method available in remote infrastructure [column 10 «lines 20-32»].

22. As to claim 14, as it does not teach or further define over previously claimed limitations, it is rejected for at least the same reasons set forth for claim 1.

23. Claims 15 and 20-22 are rejected under 35 U.S.C §103(a) as being unpatentable over Colyer, U.S Patent No. 5.903.725, in view of Clarke, in further view of Hollander.

24. As to claim 15 Colyer discloses a method for interacting with an object, the method comprising:

creating a base class proxy object [column 7 «lines 37-51» : parent class];

creating an application code generic proxy, the application code generic proxy inherits from the base class proxy object [column 7 «lines 37-51» | column 11 «lines 45-64»];

overriding a base class method defined in the base class, the overridden method receives an intercepted method call [column 3 «lines 1-11» | column 12 «lines 4-18»];

intercepting a method call on the object [column 3 «lines 1-11»];

routing the method call to the application code generic proxy [column 3 «line 61» to column 4 «line 44»];

invoking the method on the object [column 3 «line 53» to column 4 «line 25»];

receiving a first result from the object [column 3 «lines 44-59»]; and

returning a second result to the entity that generated the intercepted method call [column 3 «line 61» to column 4 «line 6»].

Colyer does not expressly disclose adapting the proxy functionality with the proxy performing pre-processing comprising transaction processing and machine learning nor does Colyer teach that the interception is made accessible to a developer to at least one of adapt or extend functionalities. Colyer also does not disclose optimizing the remote method call by determining an amount of data sent to the object, determining a type of data sent to the object, or determining which objects are invoked.

With respect to the pre-processing functionality, Clarke discloses this feature. Clarke is directed to a client-server system with a proxy system in between [Figure 1]. Clarke's proxy is adaptive in the sense that the proxy utilizes machine learning in the step of preprocessing method calls from the client in order to optimize the invocation of the calls including achieving an optimal response time by determining which objects are invoked [see response to Applicant's arguments *supra* | 0027 where : Clarke discloses that the proxy is adaptive in selecting

appropriate servers with the proxy "learning over time which origin servers are most prone to overload"].

It would have been obvious to one of ordinary skill in the art to incorporate Clarke's teachings of an adaptive proxy into Colyer's system. Clarke discloses that an adaptive proxy helps control network congestion over the network. Thus, one would have been motivated to modify Colyer's proxy to be adaptive to optimize network efficiency of handling requests over the network.

With respect to an application code accessible method call interceptor and routing intercepted methods to proxies, Hollander discloses these features. Hollander is directed to a method of intercepting function calls that originate from the operating system and routing them to a proxy [column 4 «lines 33-39»]. Hollander's user-supplied custom code corresponds to Applicant's claimed application code and Hollander's function calls read on Applicant's method calls. Hollander user-supplied custom code has access to a data structure that is populated by information, such as the call's parameters, relating to the intercepted call [abstract : "input parameters might be filtered and changed by the user code" | column 8 «lines 8-11»]. By way of this improved interception functionality, Hollander discloses that the user code has enhanced and extended capability to control, manage and handle system events [column 4 «lines 40-47»]. Hollander also discloses the optimization of the remote method call includes at least one of determining an amount of data sent to the object, determining a type of data sent to the object or determining which objects are invoked [column 11 «line 60» to column 12 «line 5» : Hollander teaches determining the type of parameters being passed to the object]. Hollander also discloses performing custom user-directed application processing to at least one of monitor or control the

processing of a message between the application code generic proxy and the object [column 2 «lines 45-52»].

Since such functionality is well known and utilized in conventional systems, it would have been obvious to one of ordinary skill in the art to have modified Colyer's proxy system to included Hollander's interception and optimization functionality. One would have been motivated to enable an interceptor that was accessible to user-code so that users would have more flexibility to manage the object environment.

25. As to claims 20-22, Colyer discloses the object is located across a remote boundary [Figure 4], the object is marshaled by reference [column 11 «lines 51-54»] and the object is marshaled by value [column 4 «lines 9-12»].

26. Claims 17-19, 23 and 27 are rejected under 35 U.S.C §103(a) as being unpatentable over Colyer, Clarke, and Hollander, in further view of Arnold.

27. As to claim 17, Colyer does not disclose the preprocessing including load balancing, object migration, object persisting, monitoring remote method calls.

28. In the same field of invention, Arnold discloses a proxy performing preprocessing including object migration, monitoring remote method calls, caching local data, caching remote data, and controlling remote method call invocations [column 9 «lines 4-27»].

It would have been obvious to incorporate Arnold's preprocessing steps into

Colyer's proxy object. Arnold discloses that such steps improve network response to method call invocation. Thus, one would have been motivated to combine the references to improve upon Colyer's proxy for the reasons stated in Arnold.

29. As to claims 18 and 19, Colyer does not expressly disclose performing post-processing.

30. Arnold discloses the application code generic proxy performing proxy post-processing after receiving the results from the object [Figure 7 «item 712»], whereby the post processing includes transaction processing, monitoring remote method calls, caching local data, and controlling remote method call invocations [column 9 «lines 4-37»]. It would have been obvious to one of ordinary skill in the art to incorporate Arnold's post processing steps into Colyer's system to enable caching of objects which improves network response to method call invocation.

31. As to claims 23 and 27, as they do not teach or further define over the previously claimed limitations, they are rejected for at least the same reasons set forth for claims 15 and 17-19.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOHM CHANKONG whose telephone number is (571)272-3942. The examiner can normally be reached on Monday-Friday [8:30 AM to 4:30 PM].

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571.272.3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dohm Chankong/
Examiner, Art Unit 2452